

Amendment and Response Under 37 C.F.R. §1.116 - Expedited Examining Procedure

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Serial No.: 10/008,392

Confirmation No.: 3013

Filed: November 13, 2001

For: System and Method Using Thermal Image Analysis for Polygraph Testing

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### Remarks

The final Office Action mailed July 16, 2004 has been received and reviewed. Claims 1-2, 12-13, 23, 36, 42, and 46 have been amended. No claims have been cancelled. Therefore, claims 1-59 are pending in the present application. Reconsideration and withdrawal of the rejections are respectfully requested in view of the amendments and remarks provided herein.

### Claim Objections

The Examiner objected to claims 1-11 and 23-29 because of various informalities.

For example, with respect to claims 1 and 23, the Examiner asserts that the language "based on the thermal image data" used in the claims should be "of the thermal image data."

Applicant has made such suggested amendments to claims 1 and 23. In addition, Applicant has made such amendments to claims 12 and 36 in view of the similarity of the "based on" language used therein.

Further, for example, it appears the Examiner is alleging that in claims 2 and 42 the use of the language "over time" in such claims is unclear in view of language in other claims.

Applicant has amended the claims 2 and 42 such that "over time" has been removed which provides the claim with clarity. In addition, Applicant has made such amendments to claims 13 and 46 in view of the similarity of the "over time" language used therein.

The amendment of the claims 1-2, 12-13, 23, 36, 42, and 46 is intended to clarify the claims, however, the scope of the claims is intended to be the same or broader after the amendment as it was before the amendment.

In view of the amendments to the claims as discussed above, the objection to claims 1-11 and 23-29 is believed to be overcome.

### The 35 U.S.C. §102 Rejection

The Examiner rejected claims 12-19, 36-40, 45-48, and 56-59 under 35 U.S.C. §102(b) as being anticipated by Zucker et al. (U.S. Patent 5,603,328). Applicant respectfully traverses the rejection of such claims.

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For a claim to be anticipated under 35 U.S.C. § 102(b), each and every element of the claim must be found in a single prior art reference. *See* M.P.E.P. § 2131. Zucker does not describe each and every element of the rejected claims.

The Examiner alleges that the term "operable" used in the claims is defined as "practicable", which is defined as "capable of being used", and that it "is therefore not a positive limitation since it only requires the ability to so perform." The Examiner continues to allege that "the image device and the computing means of Zucker are 'operable' to perform the claimed functions since the image device is capable of imaging a region of a face or any other body part and the computing device is capable of being programmed by a user to perform the claimed functions, if so desired."

As set forth in M.P.E.P. 2173.05(g), functional limitations "must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used." The term "operable," as used, for example, in claim 12, presents a functional limitation that must be evaluated and considered by the Examiner (e.g., operable refers to the operation of the computer apparatus on the thermal data to perform a function; the computer apparatus must include structure, such as, for example, a program, that performs such functionality). As such, the functional limitations presented using the term "operable" must be given consideration by the Examiner (e.g., operable serves the same purpose as "adapted to").

The Examiner alleges that Zucker describes all the limitations of the rejected claims. However, each of the rejected claims (either directly or indirectly by way of their dependency) includes the following (or a similar) limitation that computer apparatus is functional to transform the thermal image data to blood flow rate data, wherein the transformation includes calculating change of blood flow rate over a plurality of frames of thermal image data.

Zucker does not describe transformation of thermal image data to change of blood flow rate over a plurality of the frames as described in each of the rejected claims. For example, according to the present invention such calculated change of blood flow rate is described, in one embodiment, in the specification at pages 24-27. Such a transformation of thermal image data to

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change of blood flow rate is not described in Zucker.

The Examiner points to no section of Zucker which describes transforming thermal image data to change of blood flow rate as described in the rejected claims (e.g., calculating change of blood flow rate over a plurality of frames of the thermal image data). In fact, only a generalization of such transformation is alleged by the Examiner. Clearly, Zucker does not describe the transformation recited in the amended claims.

For example, Zucker appears to measure flow rate (as described in column 18, line 55-67) of a saline solution injected into a graft by sampling, over predetermined time intervals, the position of the tail portion of the solution and its displacement within that time interval (e.g., a procedure which may then be repeated for accuracy). Earlier in column 18, there is a general reference to calculation of the rate of blood flow in the graft. However, there is no transformation of thermal image data to "change of blood flow rate" over a plurality of frames (i.e., the acceleration of blood flow rate). Zucker merely determines a rate of flow (e.g., for the saline or blood in the graft). If the Examiner disagrees, it is requested that the specific portion of Zucker that shows such a transformation be cited to the Applicant such that the Applicant can address such a specific rejection.

For at least the above reasons, the rejected claims are not obvious in view of the cited references (e.g., all the claim limitations are not described therein). Further, such rejected claims include various other limitations that are not described in Zucker (e.g., transformation of the thermal image data to blood flow rate data for use in determining whether the person is deceptive or non-deceptive; classification of a person as deceptive or non-deceptive based on a change of blood flow rate in the at least one region of the face; transformation of the thermal image data using a thermodynamic model where change of blood flow rate is inversely proportional to the square of skin temperature deviation from a core temperature of a human body; capture of thermal image data during at least a period of time during at least an elicited response from a person; determining whether a person is deceptive or non-deceptive based on blood flow rate data corresponding to the thermal image data captured during at least the elicited response of the dependent claims include the limitations of the respective independent claim

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upon which they depend, etc.).

### **The 35 U.S.C. §103 Rejection**

The Examiner rejected claims 1-2, 4-8, 23, and 25-27 under 35 U.S.C. §103(a) as being unpatentable over Zucker et al., and in view of Stirbl et al. (U.S. Patent No. 5,507,291).

Applicant respectfully traverses the rejection of such claims.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. See M.P.E.P. § 2143.

The Examiner alleges that Zucker describes all the limitations of the rejected claims, except that the Examiner notes "Zucker does not disclose the particular body part being the face of a person or a region proximate the eye of a person; and using the calculated blood flow rates to determine if the person is deceptive or non-deceptive. However, the Examiner alleges Stirbl et al. discloses such elements missing from Zucker.

Each of the rejected claims (either directly or indirectly by way of their dependency) includes the following (or a similar) limitation of transforming the thermal image data to blood flow rate data, wherein transforming the thermal image data comprises calculating change of blood flow rate over a plurality of frames of thermal image data. As described above, along with all the other limitations not described by Zucker, Zucker does not describe transformation of thermal image data to "change of blood flow rate" over a plurality of frames (i.e., the acceleration of blood flow rate). Stirbl et al. does nothing to cure the lacking disclosure or deficiencies of Zucker.

For example, Stirbl describes invasive or contact type blood flow rate measurements at column 3, lines 25-41. There is no transformation of thermal image data to "change of blood flow rate" over a plurality of frames (i.e., the acceleration of blood flow rate).

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If the Examiner disagrees, it is requested that the specific portion of Zucker or Stirbl et al. that shows such a transformation be cited to the Applicant such that Applicant can address such a specific rejection.

For at least the above reasons, the rejected claims 1-2, 4-8, 23, and 25-27 are not obvious in view of the cited references (e.g., all the claim limitations are not described therein).

The Examiner also rejected claims 30, and 32-35 under 35 U.S.C. §103(a) as being unpatentable over Zucker et al. The Examiner alleges that Zucker describes all the limitations of the rejected claims, except that the Examiner notes "Zucker does not disclose the particular body part being the face of a person or a region proximate the eye of a person." However, the Examiner alleges that this would have been obvious "in order to determine blood flow information for a desired facial region of the person to diagnose a condition in that region, if so desired." Applicant respectfully traverses the rejection of such claims.

Each of the rejected claims (either directly or indirectly by way of their dependency) includes the limitation of transforming the thermal image data to blood flow rate data, wherein transforming the thermal image data comprises calculating change of blood flow rate over a plurality of frames. As described above with reference to the rejection of claims under 35 U.S.C. §102, along with all the other limitations not described by Zucker, Zucker does not describe transformation of thermal image data to "change of blood flow rate" over a plurality of frames (i.e., the acceleration of blood flow rate). Again, if the Examiner disagrees, it is requested that the specific portion of Zucker that shows such a transformation be cited to the Applicant such that Applicant can address such a specific rejection.

For at least the above reasons, the rejected claims 30 and 32-35 are not obvious in view of the cited references (e.g., all the claim limitations are not described therein).

#### Allowable Subject Matter

Applicant further acknowledges that claims 3, 9-11, 24, and 28-29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent

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form including all of the limitations of the base claim and any intervening claims and amended to overcome the objections of the Office Action. Such amendments to overcome the objections have been made. However, Applicant at this time has not rewritten such claims in independent form as it is believed that such claims are dependent from claims that are in allowable form.

Applicant further acknowledges that claims 20-22 and 31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and amended to overcome the objections of the Office Action. However, Applicant at this time has not rewritten such claims in independent form as it is believed that such claims are dependent from claims that are in allowable form.

Applicant further acknowledges the allowance of claims 41, 43-44, and 49-55.

Yet further, Applicant acknowledges the allowance of claim 42 if amended to overcome the objections set forth in the Office Action. Such amendments to overcome the objections have been made.

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It is respectfully submitted that the pending claims are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicant's Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for  
**PAVLIDIS**

By  
Mueiting, Raasch & Gebhardt, P.A.  
P.O. Box 581415  
Minneapolis, MN 55458-1415  
Phone: (612) 305-1220  
Facsimile: (612) 305-1228  
Customer Number 26813

16 Sept 2004  
Date

By: Mark J. Gebhardt

Mark J. Gebhardt  
Reg. No. 35,518  
Direct Dial (612)305-1216

**CERTIFICATE UNDER 37 CFR §1.8:**

The undersigned hereby certifies that the Transmittal Letter and the paper(s), as described hereinabove, are being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office, addressed to Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 16 day of Sept., 2004, at 3:15 pm (Central Time).

By: Sandra J. TruhartName: Sandra J. Truhart